

REMARKS

The Office Action mailed February 4, 2004 has been carefully considered.

Reconsideration in view of the following remarks is respectfully requested.

Interview Record

Applicants gratefully acknowledge the courtesy and consideration extended to Applicants' undersigned representative during the telephone interview with Examiner Blount on May 4, 2005.

During the interview, Applicants suggested the above amendments to the claims and explained the distinction between the invention as claimed and Futatsugi et al. Details of this explanation are set forth below.

Rejection(s) Under 35 U.S.C. § 102

Claims 14, 16, 17, 24, 25 and 28 were rejected under 35 U.S.C. § 102(e) as anticipated by Futatsugi et al. (U.S. pat. no. 5,621,746).

Claims 14, 27 and 28, comprising all the independent claims from which the remaining claims depend, have been amended so as to be directed to a method for making microcomponents exhibiting microreliefs having a mirror-polished surface roughness. Support for this feature can be found for example on page 8, line 32 – page 9, line 4.

By comparison, Futatsugi et al. is concerned with optical reflections from a semiconductor laser, and addresses this undesired reflection by providing the laser with a “roughened optical surface” (1a) to thereby reduce said reflection and diffuse incident light.¹ Chemical or mechanochemical techniques, including etching and sputtering, are mentioned as methods for inducing roughness.²

Futatsugi et al. does not teach “making a microrelief having [a] mirror-polished surface roughness of an optical quality for each microcomponent by mechanical machining of the substrate, the mechanical machining comprising moving at least one tool translationally and parallel to the substrate at a predetermined depth in the thickness of the substrate” as set forth in Claim 14. In column 4, Futatsugi et al. discuss the formation of grooves 3. According to Futatsugi et al., these are “cut into the semiconductor substrate 1 through the electrode 10 by a dicing machine, leaving a thickness d of the semiconductor substrate 1.”³ The grooves “are defined by dicing with the side wall surfaces 3a formed as optically roughened surfaces upon dicing.”⁴ Alternatively, “the grooves may be defined by chemical or mechanochemical etching with the side wall surfaces 3a formed as optically roughened surfaces upon chemical or mechanochemical etching.”⁵ There is no teaching in Futatsugi et al. of making a microrelief having a mirror-polished surface roughness.

¹ Futatsugi et al., col. 5, lines 10 – 12.

² Id., col. 6, lines 6 – 12.

³ Id., col. 4, lines 64 – 67.

⁴ Id., col. 6, lines 4 – 6.

⁵ Id., col. 6, lines 6 – 9.

It will be appreciated that, according to the M.P.E.P., a claim is anticipated under 35 U.S.C. § 102 only if each and every claim element is found, either expressly or inherently described, in a single prior art reference.⁶ The aforementioned reasons clearly indicate the contrary, and withdrawal of the 35 U.S.C. § 102 rejection based on Futasugi et al. is respectfully urged.

Rejection(s) Under 35 U.S.C. § 103 (a)

Claims 18 – 20, 22 and 27 were rejected under 35 U.S.C. § 103(a) as unpatentable over Futatsugi et al. Claim 15 was rejected under 35 U.S.C. § 103(a) as unpatentable over Futatsugi et al. as applied to Claim 14, and further in view of Robertson (U.S. pat. no. 6,039,632). Claims 21 and 26 were rejected under 35 U.S.C. § 103(a) as unpatentable over Futatsugi et al. as applied to Claims 14 and 20, and further in view of Maoujoud (U.S. pat. no. 5,868,125). Claim 23 was rejected under 35 U.S.C. § 103(a) as unpatentable over Futatsugi et al. as applied to Claim 14, and further in view of Holzapfel (U.S. pat. no. 5,842,912).

The above failure of Futatsugi et al. to teach the claimed feature of “making a microrelief having [a] mirror-polished surface roughness of an optical quality for each microcomponent by mechanical machining of the substrate” is not remedied by any of Robertson, Maoujoud or Hozapfel. In any case, the feature would be antithetical to Futatsugi et al., which is seeking to minimize unwanted reflections and accordingly provides a roughened device surface rather than the claimed mirror-polished surface which in some applications is actually intended to maximize reflections, as detailed in the specification (see for example page 8, line 32 – page 9, line 4). In

⁶ Manual of Patent Examining Procedure (MPEP) § 2131. See also *Verdegaal Bros. v. Union Oil Co. of California*,

this sense Futatsugi et al. actually teaches away from the invention, and even if considered in combination with Robertson, Maoujoud or Hozapfel, would neither teach nor suggested the invention as claimed. Accordingly the rejection under 35 U.S.C. § 103(a) of Claims 14, 27 and 28, and the remaining claims dependent therefrom, is improper and should be withdrawn.

Newly-Added Claims

Claims 31 – 34 have been added to further particularly point out and distinctly claim the subject matter regarded as the invention. Specifically, these claims set forth the additional limitation of microrelief roughness of about 1 to about 100nm RMS as discussed during the Examiner interview, and are supported for example on page 13, lines 16 – 23 of the specification.

Conclusion


In view of the preceding discussion, Applicants respectfully urge that the claims of the present application define patentable subject matter and should be passed to allowance.

If the Examiner believes that a telephone call would help advance prosecution of the present invention, the Examiner is kindly invited to call the undersigned attorney at the number below.

Please charge any additional required fees, including those necessary to obtain extensions of time to render timely the filing of the instant Amendment and/or Reply to Office Action, or credit any overpayment not otherwise credited, to our deposit account no. 50-1698.

Respectfully submitted,
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